2016 Cloud Seeding FAQ's

What is cloud seeding?

Cloud seeding is a common term for one form of weather modification. Modern cloud seeding is used for a variety of reasons, including increasing the amount of rainfall produced from clouds, reduce hail from thunderstorms, and eliminate fog that reduces visibility at busy airports.

How does cloud seeding work?

Cloud seeding helps clouds produce more rainfall by adding tiny particles called ice nuclei to the clouds. Inside the seeded clouds, water vapor freezes onto the particles. These heavier frozen particles fall towards the ground as rain. Cloud seeding does not create new clouds; it increases the amount of rainfall from existing clouds. Cloud seeding typically helps existing clouds produce 10-15% more rainfall than if the clouds were not seeded.

Why is the LA County Public Works Cloud Seeding now?

In January 2014, Governor Jerry Brown declared a California statewide drought emergency. In response to the Governor's proclamation, the Los Angeles County Board of Supervisors requested Public Works to investigate the possibility of enhancing local water supplies through cloud seeding. Since then, the drought has continued. The combination of record low rainfall and the need to improve long-term local sustainability of local water supplies warrant the use of cloud seeding in Los Angeles County.

How did LA County Public Works initiate its Cloud Seeding Project?

Public Works issued a Request for Proposal (RFP) to solicit proposals from consultants with experience in cloud seeding services. A committee reviewed and evaluated the proposals and recommended North American Weather Consultants, Incorporated (NAWC) as most qualified to fulfill Public Works' needs. Following selection, Public Works received Board approval to enter into a contract with NAWC.

What is the scope of LA County Public Works' cloud seeding project?

Cloud seeding activities will target watersheds located in the San Gabriel Mountains. Ten land-based silver iodine generators will be installed along the foothills. The operation of the cloud seeding generators will depend on weather forecasts and consultant analysis.

What is the expected cost of the project?

The current estimated cost for cloud seeding consultant services is \$550,000 for the initial year, with the option to extend the services for four additional one-year terms of \$400,000 each, for a maximum not-to-exceed total of \$2,150,000. The final actual cost of the project will depend on actual services rendered.

What is the benefit of cloud seeding in LA County?

Historical analysis of cloud seeding in the County of Los Angeles indicates that on average an additional 4,500 acre-feet (1.5 billion gallons) of stormwater is captured each year in the targeted watersheds. That's enough drinking water for 36,000 residents of Los Angeles County.

Is cloud seeding cost effective?

Yes, the value of the additional stormwater captured when cloud seeding is implemented is estimated at \$3.2 million per year based upon the current price of purchasing water from the Metropolitan Water District (MWD). The price of stormwater captured from cloud seeding activities is \$122 per acre-foot compared to MWD's \$714. That is 83% less than imported water.

Has LA County Public Works ever cloud seeded in the past?

Yes, since in the 1950's the County of Los Angeles has conducted cloud seeding activities in order to augment local water supplies. When there is abundant rain or major fires affect the targeted watersheds, cloud seeding is temporarily halted.

When was the last time LA County Public Works had a cloud seeding contract?

Public Works last had a cloud seeding contract in 2009 with North American Weather Consultants, Incorporated. The contract was for three years at a total maximum cost of \$800,000. The contract was terminated due to the Station Fire. It should be noted that the current cloud seeding contract RFP is identical to the 2009 cloud seeding contract.

Did the public have input on past projects?

Yes, during the last cloud seeding contract in 2009, outreach was conducted in association with the Mitigated Negative Declaration prepared for the Cloud Seeding Project in compliance with the California Environmental Quality Act (CEQA). A Public Notice of the Draft Mitigated Negative Declaration (DMND) was published in the Los Angeles Daily News, Los Angeles Times, Pasadena Star News, and San Gabriel Valley Tribune newspapers on July 24, 2009. Copies of the DMND were also sent to 8 cities

and 11 local libraries. No comments from the public were received during the CEQA open comments period. A Notice of Determination was filed and available for public inspection on October 22, 2015 for 30 days. A Notice of Intent was published in the San Gabriel Valley Tribune, Pasadena Star, and Los Angeles Daily newspapers from January 22 through February 5, 2016.

When was the last time LA County Public Works actually cloud seeded?

Records indicate that Public Works last cloud seeded in March of 2002.

Do other counties cloud seed?

Yes, Santa Barbara County has a cloud seeding program. Unlike Los Angeles County's cloud seeding project, Santa Barbara County uses airplanes to cloud seed.

Where will cloud seeding take place?

The cloud seeding generators have been installed on County owned properties along the foothills of the San Gabriel Mountains, ranging from Pacoima to Duarte. The generators will deliver the cloud seeding material north into the mountains.

What are the target watersheds to be cloud seeded?

The target watersheds are Pacoima Wash, Tujunga Wash, and San Gabriel River.

What materials are used in cloud seeding?

The most common material in cloud seeding is silver iodide. The manually operated generators contain a solution of silver iodide, acetone, and sodium iodide. Remote operated generators contain ammonium perchlorate, zinc powder, aluminum powder, silver iodide, copper iodide and ammonium iodide. Only acetone is listed as a hazardous material by the U.S. Environmental Protection Agency, and it will be used, disposed, and transported in such a way that there will be no significant hazard to the public and environment. After going through combustion, acetone breaks down into CO_2 and water.

Does cloud seeding harm the environment?

There is no evidence that suggests cloud seeding creates any significant negative environmental impacts. Data collected since the 1950's show that the amount of silver iodide used in a target area after a cloud seeding project is significantly less than the amount known to be toxic to plants, animals, trees, or humans. It is often difficult to detect any silver accumulation from cloud seeding above the background amounts that are naturally present in the environment.

Will cloud seeding end the drought?

According to NASA in 2014, California was projected to need 11 trillion gallons to end the drought. The cloud seeding for Los Angeles County is projected to add 1.4 billion gallons of rain per storm season. It will take years of above average rainfall to end the drought, and the additional precipitation from cloud seeding will assist in reaching that objective.

Will cloud seeding create global warming?

The manually operating cloud seeding generators use a propane combustion system which emits 1.6 metric tons of CO_2 per year. A typical passenger vehicle emits about 4.7 metric tons of CO_2 per year. The emissions from a propane combustion system represent a less than significant impact on the global climate.

Is cloud seeding safe? Will there be flooding?

Licensed professional meteorologists will monitor incoming storm systems to determine if they qualify for cloud seeding. One of the criteria that is used to determine if cloud seeding should be initiated is the amount of predicted rainfall. Cloud seeding will not be activated if the rainfall is more than 1" per hour, or more than 5" over 24 hours. This limits the potential for flooding conditions. Cloud seeding will not be used in areas that were impacted by fire damage within the past 5 years to prevent debris and mudflow.

Is there a link between cloud seeding and atmospheric chemtrails?

No. There is no evidence of any connection between cloud seeding and chemical trails (chemtrails). Atmospheric scientists use the term "contrails" which are defined as trails of condensed water vapor created by an engine at high altitudes. These trails are the result of normal emissions of water vapor, carbon dioxide, and some carbon-containing particulates. Contrails are normally observed on otherwise clear days, when cloud seeding would not be conducted. Cloud seeding sources do not produce such visible clouds.

Does cloud seeding steal precipitation from other areas?

No. Several studies have shown that areas located 50 to 100 miles downwind of targeted watersheds actually receive more rainfall as a result of cloud seeding activities. Also, as clouds pass over mountainous areas, they typically undergo nearly continuous moisture replenishment.